



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,528	10/06/2006	Albert Hammerschmidt	2003P01440WOUS	8748
22116	7590	02/25/2008		
SIEMENS CORPORATION			EXAMINER	
INTELLECTUAL PROPERTY DEPARTMENT			KALAFUT, STEPHEN J	
170 WOOD AVENUE SOUTH			ART UNIT	PAPER NUMBER
ISELIN, NJ 08830			1795	
		MAIL DATE	DELIVERY MODE	
		02/25/2008	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/557,528	Applicant(s) HAMMERSCHMIDT, ALBERT
	Examiner Stephen J. Kalafut	Art Unit 1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 November 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 10-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 10-27 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 21 November 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 21 Nov 2005, 19 April 2006
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

Claims 11-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term “hydrophobing material”, in claims 11-13 and 25, has no clear definition. Is “hydrophobic” intended? Claims 14-24, 26 and 27 depend on claims 11, 12, 13 or 25, and would likewise be indefinite. The term “highly-conductive” in claim 25 would have indefinite scope, since neither the claims nor the specification teach the degree of conductivity that is encompassed by the term “high”. The terms “high hydrophobicity” and “low electrical contact resistance” will be permitted because they imply an optimization between a maximum hydrophobicity and minimum resistance.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 11, 14, 15 and 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cisar *et al.* (US 6,203,936).

Cisar *et al.* disclose a bipolar plate for a fuel cell (column 1, lines 62-65) comprising a metal substrate (column 1, lines 65-67) and a coating comprising a metal and a hydrophobic composite material onto a first coating comprising Ni and Pd (column 2, lines 12-26). The coating may also comprise Ni and Al (column 3, table 2). Thus, the bipolar plate would comprise a Ni-based alloy. The Al substrate may also be plated with Au (column 6, lines 63-64),

which would form a highly-conductive contact layer. Because solid polymers are not totally crystalline, the PTFE in the coating (column 5, lines 54-56) would be a partially amorphous fluoropolymer. Because claims 14 and 15 do not recite any particular thickness, the composite would meet the requirements of a high hydrophobicity and low contact resistance. The fuel cell of Cisar *et al.* a membrane-electrode unit, because it is a proton-exchange membrane fuel cell (column 1, lines 11-15).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cisar *et al.*

These claims differ from Cisar *et al.* by reciting the thickness of the hydrophobic layer. However, because the skilled artisan would be familiar with the effect of thickness on conductivity, mechanical strength and protective function, determining an optimal thickness would be within the skill thereof. Therefore, these claims would be obvious over Cisar *et al.*

Claims 12, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cisar *et al.* in view of either Gyoten *et al.* (EP 1117142), or Shah *et al.* (US 6,824,874).

These claims differ from Cisar *et al.* by reciting a hydrophobing (sic) material that comprises a polysiloxane compound or alkylsilanes. Gyoten *et al.*, cited by applicants, disclose a alkylsilanes (paragraph 0016) as being hydrophobic (paragraphs 0014 and 0015). Because of this hydrophobic property, it would be obvious to use the alkylsilanes of Gyoten *et al.* as the hydrophobic component of the coating of Cisar *et al.* Shah *et al.* disclose polysiloxane compounds as coatings for fuel cell plates (column 9, line 50 through column 10, line 13). Because of the good chemical resistance and mechanical properties (column 3, lines 40-49), it would be obvious to use the polysiloxane compounds of Shah *et al.* as the polymer in the coatings of Cisar *et al.*.

Claim 13 is would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art does not disclose or teach alkyl aryl silanes, halogenated or not, as coatings for fuel cell bipolar plates.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Meguriya *et al.* (US 6,713,205) disclose sealants for fuel cells, comprising an organopolysiloxane. Kindler *et al.* (US 6,291,093) disclose fuel cells end plates and bipolar plates with hydrophilic coatings. The "X" citations in the International Search Report are noted. The hydrophobic layers disclosed by Appleby *et al.* (US 2001/26884) and Gyoten *et al.* (above) are not part of the bipolar plates disclosed thereby. Thus, these references would not qualify as

Art Unit: 1795

prior art under §102 or under §103 as a single reference. However, Gyoten *et al.* is still seen as applicable as part of a combination, as explained above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen J. Kalafut/
Primary Examiner, Art Unit 1795